



Original Communication

Elder homicide in the north of Portugal

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ABSTRACT

Introduction: The increasing average life expectancy leads to population aging, and growing numbers in the elder population, a population that suffers from great vulnerability. Therefore, a rise in elder homicide is expected. This phenomenon has not been thoroughly described in Portugal. This study aims to analyse and characterize elder homicide, in order to achieve a better understanding of this form of violence.

Material and Methods: We conducted a retrospective study, reviewing autopsy reports along with data regarding circumstances of death of suspected homicides occurring between 1992 and 2007 ($n = 78$), whose victims were 65 years old or above, autopsied in the medical–legal services of the north of Portugal.

Results: During this period, an overall of 615 suspected homicides occurred, 13% being perpetrated against elders. The age range of the victims was 65–96 years, with an average of 74 years; 58% of them were males and 45% were married. In 61% of the documented cases, the perpetrator was known to the victim, and a family member in 36%. A considerable number of deaths occurred at the victim's residence and in a rural scenario, the motive being robbery in 51% of the documented cases. The supposed perpetrator ran away from the scene in 64% of the cases. The most frequent mechanisms of death were blunt force trauma (31%), followed by stabbing (22%) and gunshot wounds (21%). Fatal wounds were observed mainly in the head (55%) and thorax (35%).

Conclusions: In the north of Portugal, elder homicide seems to be uncommon. This study suggests an association between elder homicide and robbery, in which elders, due to their vulnerability, are a preferential target. Contrary to other reports worldwide, there were no cases of death in nursing homes, possibly due to underreport or misidentification. In a large number of the cases, it wasn't possible to collect all the necessary data, due to lack of information regarding circumstances of the events.

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1. Introduction

Over the last few years there has been an increase in the average life expectancy of the Portuguese population^{1–3}; in 1990, the average life expectancy at birth was 74.1 years (70.6 for males, 77.6 for females), growing to 78.5 (75.2 for males, 81.8 for females) in 2006. These changes led to an aging population, resulting in a substantial increase of the elderly (greater than 65 years-old), from 13.6% (in 1990) to 17.3% (in 2006), representing a relative growth of 34.8%. This increase has been more significant in those

aged 80 years or more, with a relative growth of 66.8%.² It is expected that this trend will continue in the next years, with estimates suggesting the duplication of the elder/juvenile population ratio by the year 2050.²

In 2006, most elders (62.8%) lived with the spouse, and 20.7% lived alone (28.8% of females and 9.4% of males) – this difference has been increasing since 1998 (26.9% for females; 10.2% for males), with a growing tendency for females and the opposite for males.²

The north of Portugal accounts for approximately 35% of the Portuguese population. In this region, the elder population has been growing similarly to the increase observed nationwide, representing 15.2% of the northern population in 2007.^{1–3}

The elderly suffer from significant morbidity, due to various factors, such as weakness, illness and isolation, factors that may

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contribute to an increased vulnerability to assaults.⁴ In fact, although the majority of elders will die from natural causes, due to the aforementioned factors, homicides in this age group will also occur in a rising number.^{5,6}

Recently, elder homicide has been a study subject for some researchers.^{4,5,7,8} The majority of the studies regarding this subject are typically descriptive retrospective studies. Most of them focus on age and sex of victim/perpetrator, their relationship, setting and motive of the assault, instrument used and location of fatal wounds,⁸ although some of these compare data on elder homicide with data from non-elder homicide cases.^{4,7}

The characterization of these occurrences, together with the depiction of the victim and the perpetrator, may contribute to a greater knowledge by the pathologists, facilitating the recognition of future cases and allowing the possibility of preventive social intervention.

This phenomenon is not yet completely characterized and described in Portugal, therefore, the aim of this study is to analyse and characterize elder homicide, which will allow a better understanding regarding this form of violence in this country.

2. Material and methods

A retrospective study was conducted through the analysis of autopsy reports and data regarding circumstances of death of suspected homicide cases autopsied in the northern medical–legal services of the National Institute of Legal Medicine (INML), occurring between 1992 and 2007, and whose victims' age was 65 years or more ($n = 78$). Studied variables included age, sex, occupation of the victim, some characteristics of the supposed perpetrator such as the relationship with the victim, alleged motive of the assault, location of the occurrence, behaviour of the supposed perpetrator after the occurrence, mechanism of death and anatomical distribution of fatal and non-fatal wounds. Due to the retrospective nature of the study, it was not possible to collect all data regarding different variables. Data was collected by two investigators, and analysed with statistical software "SPSS" version 16. Statistical analysis was conducted using non-parametric tests and contingency tables with Fisher's exact test for independence, due to sample size.

3. Results

Over the 16-year period, 615 suspected homicide cases were autopsied in the medical–legal services of the north of Portugal, 78 (13%) being perpetrated against elders (Graph 1), which represents 2.2/100,000 inhabitants.

Considering the victims, 45 (58%) were males; the age range was 65–96 years-old (mean = 74.0), with 16 victims older than 79 years. No significant difference in age was found between genders (mean = 75.7 in females and 72.8 in males, $p = 0.079$). Most the victims were married ($n = 35$; 45%) or widowed ($n = 22$; 28%); the victim was single in only 18% of the cases ($n = 14$).

Information about the relationship between the victim and the supposed perpetrator was present in only 44 cases. Within these cases, in 61% ($n = 27$) the perpetrator was known to the victim (a family member in 16 cases [36%]) (Table 1).

Table 1
Perpetrator–victim relationship ($n = 44$).

		<i>n</i>	%	Total <i>n</i> (%)
Intrafamilial	Husband/Wife	7	16	16 (36)
	Son/Daughter	5	11	
	Other relative	4	9	
Extrafamilial	Neighbour	3	7	28 (64)
	Acquaintance	8	18	
	Stranger	17	39	

The circumstances of the occurrence (alleged motive, incident's location and the perpetrator's behaviour following the occurrence) are described in Table 2.

Alleged motive was "robbery" in 51% of the documented cases ($n = 24$). The "Others" category included problems related with agricultural activity and revenge. When analysing the relation between alleged motive and supposed perpetrator–victim relationship, a large number of cases were perpetrated by a stranger, with robbery as the motive ($n = 12$; 15%). Robbery was more common in cases with an extra-familial perpetrator ($p = 0.001$), although in 10 cases with robbery as alleged motive there was no information regarding supposed perpetrator–victim relationship (13%). No significant difference was found in the distribution of "robbery" by victim's sex ($p = 0.770$).

In relation to the place of the occurrence, 49 of the incidents occurred at the victim's residence (68% of the documented cases), which was also the perpetrator's residence in 10 cases. Incidents occurring at the victim's residence were statistically more frequent within cases with intra-familial perpetrators ($p = 0.049$). A significant part of the incidents occurred at the victim's place, with robbery as the alleged motive ($n = 20$; 26%).

The supposed perpetrator's gender was documented in 37 cases, 95% of which were males ($n = 35$). In most of the cases, the perpetrator "fled the scene" after the occurrence ($n = 29$; 64% of the documented cases). These occurrences took place primarily in rural locations (46%), followed by urban ones (30%).

Major mechanisms of death were blunt force trauma (31%), followed by stabbing (22%) and gunshot wounds (21%) (handguns in 9 cases and shotguns in 7). Of the 9 cases with "multiple" mechanisms of death, 5 were blunt force trauma associated with strangling and 2 were blunt force trauma associated with stabbing. "Others" included one case of intoxication by carbon monoxide due to arson (Table 3).

Fatal wounds were observed exclusively in the head in 30 cases (39%); 20 cases had fatal wounds in multiple locations (26%) (Table 3). The overall incidence of fatal and non-fatal wounds in each anatomical location is depicted in Fig. 1; defense wounds on the upper limbs were present in 33 cases (42%).

A toxicological analysis was run on 57 cases (73%) and toxicological tests were positive for ethanol (0.10–2.46 g/L) in 28 of those cases (49%).

4. Discussion

Between 1992 and 2007, there was a significant lifespan increase in the Portuguese population, resulting in the growth of

Table 2
Circumstances of the occurrence.

		<i>n</i>	%
Alleged motive of the assault ($n = 47$)	Robbery	24	51
	Frivolous	7	15
	Fight	5	10
	Passionate	3	6
	Sexual assault	2	4
	Others	6	12
Location of the occurrence ($n = 72$)	Victim's residence	49	68
	Street	13	18
	Victim's property	4	6
	Perpetrator's property	2	3
	Victim's work place	2	3
	Public building	1	1
	Woods	1	1
Behaviour of the supposed perpetrator after the occurrence ($n = 45$)	Fled the scene	29	64
	Gave him/herself up to authorities	7	16
	Stayed at the scene	4	9
	Attempted/committed suicide	4	9
	Resisted arrest	1	2

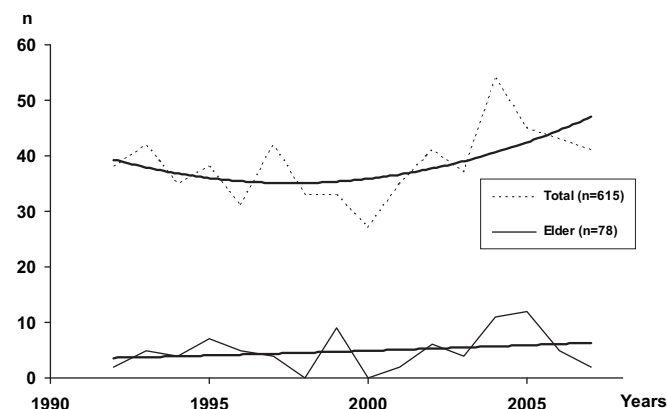
Table 3
Mechanism of death and anatomical distribution of fatal wounds ($n = 78$).

		<i>n</i>	%
Mechanism of death	Blunt force trauma	24	31
	Stabbing	17	22
	Gunshot wound	16	21
	Strangling	8	10
	Drowning	3	4
	Multiple	9	12
	Others	1	1
Anatomical distribution of fatal wounds	Head	30	39
	Neck	16	21
	Thorax	11	14
	Systemic	1	1
	Multiple	20	26

the elder group.^{1–3} As the number of the elderly increases, the number of homicide cases is expected to rise as well.⁹

During the 16-year period this study covered, the overall homicide number ($n = 615$) revealed a tendency to increase, nonetheless, the number of homicides in the elder population was relatively stable.

Concerning the victims, there was a slight predominance of males, with 16 victims (21%) being 80 or more years old, whose additional vulnerability makes them an important target for assault. In spite of the higher average life expectancy observed in



Graph 1. Evolution of the number of homicides during a 16-year period (1992–2007) in the north of Portugal.

females in this population,² no significant difference in ages was observed between both genders.

Contrary to the expected in an aged population, most of the victims were married ($n = 35$; 45%), thus not exposed to isolation, one of the factors described as facilitating attacks.^{4,9}

In a considerable number of cases, it was not possible to determine the supposed perpetrator/victim relationship. Of the documented cases, most of the perpetrators were known to the victim (relatives, neighbours, acquaintances). Other studies focusing both on elder homicide and elder maltreatment have analysed the perpetrator/victim relationship, with similar findings.^{4,5,9,10}

In our study, the great majority of supposed perpetrators were male. This finding is consistent with data from other studies on both elder homicide and homicide in all ages.^{5,11}

The investigation of the motive/scenario is an essential component when analysing violent deaths.⁵ Several studies have investigated the motive for assaults in the elderly, robbery being the prevalent motive in some of them.^{4,5} In this study, the most frequent alleged motive was also robbery, even though there were a significant number of cases with unknown motive. The vast majority of the occurrences with robbery as alleged motive were perpetrated by stranger or unknown assailants, as expected.

Some authors have drawn attention to sexual abuse in the elderly.^{5,12} Considering the low rate of reporting, researchers have tried to define the typical elder assault victim, with reports suggesting that most sexual assaults occur at home, when the victim is alone, with female victims and male perpetrators, the last frequently known to the victim and user of alcohol.⁵ In our study there were only 2 cases of sexual abuse (4%), both perpetrated against females, by acquaintance or unknown assailants.

A history of intra-familial domestic violence may be found associated with homicide¹¹; in our study, although most of the incidents occurred at victim's residence, only 36% of the documented cases were related to domestic violence ($n = 16$).

Similar to the findings in other studies,^{4,5,7} the most common location for the incidents was the victim's residence, which, together with robbery as the motive, has been described as a common scenario for elder homicide.^{4,5} Some studies have analysed elder homicide in nursing homes,^{13,14} which is apparently underreported and under-investigated,^{5,13} in spite of this residences being considered as a risk factor.⁵ In our study, there were no cases of incidents occurred in nursing homes; this may be associated with the use of these nursing homes not being completely established in our society, together with the already mentioned underreport of these incidents.

The majority of the incidents were set in rural settings. Researchers have investigated regional variation in lethal violence,

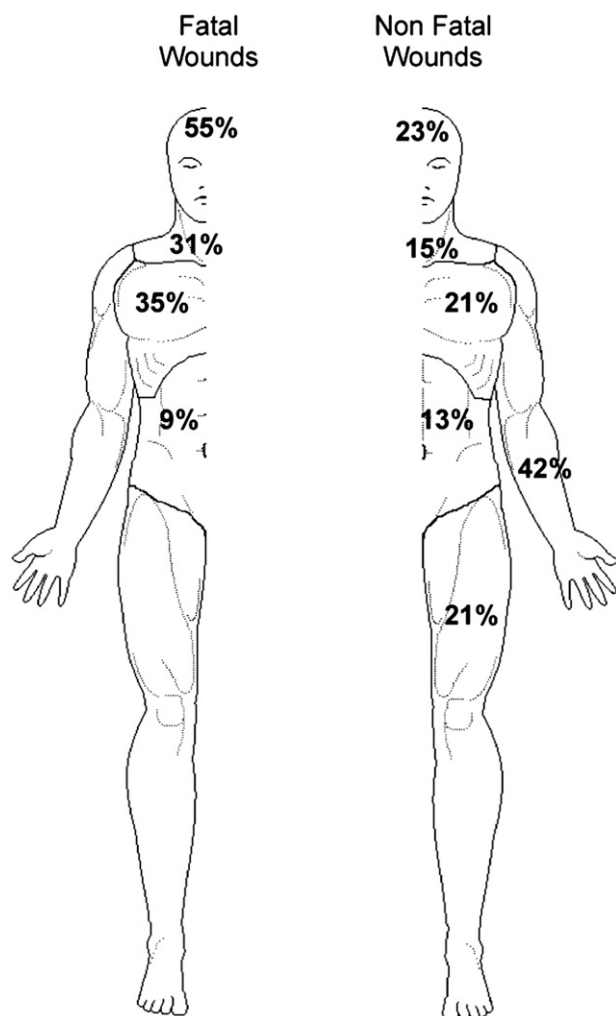


Fig. 1. Anatomical distribution of fatal and non-fatal wounds.

some of the studies suggesting that both structural and cultural forces contribute to rural homicide rates.¹⁵ In our study, most of the incidents set in a rural area were related with long-lasting conflicts with neighbours and other acquaintances, related mainly with the agricultural activity. Nonetheless, there were also a significant number of cases with robbery as the motive.

The behaviour of the supposed perpetrator after the occurrence was predominantly escaping the crime scene, which is consistent with robbery as the main motive. In 4 cases (9%) the perpetrator attempted/committed suicide. This phenomenon has been labelled as homicide-suicide events or dyadic deaths¹⁶ and several studies on the subject have been conducted.^{16–19} Although rare, these events are traumatic for witnesses, have long-lasting effects on surviving family members and can generate intense media coverage.¹⁷

In our study, there was a slight predominance of blunt force trauma as the mechanism of death, followed closely by stabbing and gunshot wounds. Other studies on elder homicide and homicide in all ages have shown a slight dominance of gunshot wounds as the cause of death.^{4,5,11,20,21} Documentation of the instrument used in the assault was not possible due to the absence of data in individual case files. When considering homicide by blunt force, researches have found that most of the victims were males, which were killed by an acquaintance, motivated by conflicts²²; in our study, no significant difference was found, related to victim's gender.

The most frequent location for fatal wounds was the head, followed by thorax and neck. Non-fatal wounds were mainly located on the upper limbs; surely most of these correspond to defense wounds. Defense wounds are not uncommon upon the victims of homicide, with typical locations such as forearm and hands, being valuable evidence in homicidal deaths.²³

A large amount of research has demonstrated a strong link between alcohol use and violence²⁴ and it has been described as an important factor in violent interactions that culminate in homicide.²⁵ Besides facilitating conflicts and increasing the potential for violent behaviours by the perpetrator, it also weakens and disorients the victim, thus reducing the discerning and self-defence capabilities, making them an “easy target” for assaults. The incidence of alcohol-positive toxicology tests from homicide victims described in the literature is variable, ranging from 17% to 63%.^{5,24,25} In our study, the victims' toxicology tests were positive for alcohol in 49%.

One of the limitations of our study was the lack of information, in some cases, regarding some of the studied variables, which can hinder further analysis of results and conclusions. Since 2001, Portuguese medical–legal services offer an on-call service, 24 h a day, 7 days a week, in which the forensic pathologist integrates a multidisciplinary team, responsible for crime scene investigation in all suspected homicide cases. This aspect can prove crucial to future studies of violent deaths, as it allows a more extensive documentation of circumstances of death in those cases, increasing the reliability of individual case files.

In spite of its relevance, it was not possible to study judicial sentences of individual case files.

5. Conclusions

The analysis of our study's results allowed us to draw the following conclusions:

- a) In the north of Portugal, elder homicide seems to be uncommon; however, the total number of elder homicides may be masked by misidentification or underreport;
- b) Elder homicide, apparently, is mainly motivated by robbery; such incidents occur more often in the victim's residence, although its circumstances are not always clear;

- c) Fatal wounds are mostly found in the head, which can be explained by the prevailing method; however, in several instances, there was not enough information available in the autopsy report and data regarding circumstances of death, which can hinder further analysis;
- d) The most prevalent mechanism is the use of blunt instruments, although there is also wide use of sharp or stabbing instruments and firearms;
- e) Contrary to other reports worldwide, there were no cases of death in nursing homes, possibly due to underreport or misidentification;

In the future, and for a better comprehension regarding this phenomenon, it will be necessary a more comprehensive and exhaustive review of the circumstances of death and judicial sentences analysis, this study representing a preliminary approach to a phenomenon, until now, not studied in Portugal.

Conflict of interest

The authors confirm that the material presented in this manuscript is original and has been submitted solely to this journal, after been prepared according to the given instructions.

The authors, also, confirm that all authors have seen and approved the submitted version of the manuscript and had full access to all of the data in this study.

The authors confirm that all research has been carried out according to all the legal requirements of the study field.

Finally, we also state that neither the author nor any of the co-author has any potential conflict of interests related to the publication of this paper.

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Ethical approval

This study has been carried out in accordance with ethical rules and it has not been submitted to Ethical Approval because it is a retrospective case review in which no invasive studies were carried out nor identification of the individuals were given.

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